Water Heater Unit

Webasto
Feel the drive

***Thermo Top E* Additional Heater** e1 00 0003

***Thermo Top C* Additional Heater** e1 00 0002

***Thermo Top P* Additional Heater** e1 00 0104

Installation Instructions

VW Caddy

1.6 Liter Gasoline and 2.0 Liter Gasoline Eco Fuel; 2.0 Liter SDI
from Model Year 2005
Left-hand drive vehicle

WARNING!

Hazard warning:

Incorrect installation or repair of Webasto heating systems may cause a fire or result in the emission of carbon monoxide, which can be fatal. Serious or fatal injuries can be caused as a result.

Specialist company training, technical documentation, specialized tools and equipment are required to install and repair Webasto heating and cooling systems.

NEVER attempt to install or repair Webasto heating or cooling systems if you have not successfully completed the company training and thereby acquired the required technical skills, or if you do not have access to the required technical documentation, tools and equipment needed to carry out correct installation and repairs.

ALWAYS follow all Webasto installation and repair instructions and observe all warnings.

Webasto does not accept any liability for defects and damage that are attributable to installation by untrained staff.

Ident. No.:9013722D_EN Fee Euro 10.00

Table of Contents

Validity

Manufacturer	Model	Type	EG-BE No./ABE
VW	Caddy	2KN	L 320
VW	Caddy	2K150	e1*2001/116*0252*...

Engine type	Engine model	Output in kW	Displacement in cm³
BSE	Gasoline	75	1595
BSX	Gasoline [Eco Fuel]	80	1984
BDJ	Diesel	51	1968

Vehicle and engine types, equipment variants and national specifications not listed in these installation instructions have not been tested. However, installation according to these installation instructions may be possible.

The installation location of a digital timer and summer/winter switch should be confirmed with the end customer before installation.

Heater Unit/Installation Kit

Quantity	Description	Order No.:
1	Retail accessories with desired heater control	See price list
1	Installation kit for VW Caddy 1.6 Liter Gasoline and 2.0 Liter Gasoline Eco Fuel; 2.0 Liter SDI	9013723B

Also required with Climatronic

Quantity	Description	Order No.:
1	IPCU Kit for Climatronic	9013645A

Heater unit recommended for the respective vehicle class:

Vehicle	Heater unit
Compact car	Thermo Top E
Mid-size car, station wagon	Thermo Top C
Full-size car, van, offroader	Thermo Top P

The selection of the heater unit is based on the passenger compartment size of the vehicle and the level of comfort required by the customer!

Foreword

These installation instructions apply to VW Caddy 1.6 Liter Gasoline and 2.0 Liter Gasoline Eco Fuel; 2.0 Liter SDI vehicles - for validity, see page 2 - from model year 2005 and later, assuming technical modifications to the vehicle do not affect installation, any liability claims excluded. Depending on the vehicle version and equipment, modifications may be necessary during installation with respect to these installation instructions.

However, the stipulations in the "installation instructions" and "operating and maintenance instructions" for the *Thermo Top C/P/E* must always be observed.
The corresponding rules of technology and any information from the vehicle manufacturer should be observed during the installation work.

General Instructions

Installation should be carried out according to the general, standard rules of technology. Unless specified otherwise, fasten hoses, lines and wiring harnesses to original vehicle lines and wiring harnesses using cable ties.
Sharp edges should be fitted with edge protectors (split-open plastic hose).
Spray unfinished body areas, e.g. drilled holes, with anti-corrosion wax (Tectyl 100K, Order No. 111329).

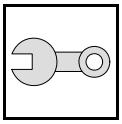
Special Tools

- Torque wrench for 2.0 - 10 Nm
- Hose clamping pliers
- Metric thread-setter kit

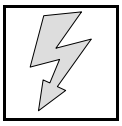
Explanatory Notes on Document

To provide you with a quick overview of the individual working steps, you will find an identification mark on the outside top right corner of the page in question.

Mechanical system

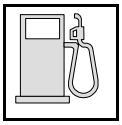


Electrical system



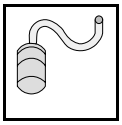
Water

Fuel



Exhaust gas

Combustion air



Special features are highlighted using the following symbols:

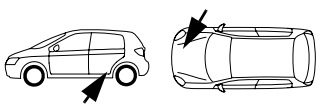
Specific risk of injury or fatal accidents.

Specific risk of damage to components.

Specific risk of fire or explosion.

Reference to general installation instructions of Webasto components or to the manufacturer's vehicle-specific documents.

Reference to a special technical feature.



The arrow in the vehicle icon indicates the position on the vehicle and the viewing angle.

All dimensions are in mm!
Tightening torque of hose clamps = 2.0 + 0.5 Nm!
Tightening torque of Ejot screws, Ejot studs = 10 Nm!

Preliminary Work

WARNING!

- Open fuel tank cap, ventilate tank.
- Close the tank cap again.
- Disconnect the battery "earth" or "ground" connection.
- Depressurize the cooling system.
- Copy the factory number from the original type label to the duplicate type label.
- Remove years that do not apply from the duplicate label.
- Attach the duplicate label (type label) in the appropriate place.
- Completely remove the battery.
- Remove the battery carrier.
- Remove the engine cover.
- Remove the air filter together with the intake hose.
- Remove the right front wheel.
- Remove the front section of the right front wheel well trim.
- Remove the underride protection (if present).
- Remove the bumper.
- Remove the washer reservoir.
- Remove the right-hand underbody trim
- Remove the footwell trim on the driver's side and front passenger side
- Remove the lower instrument panel trim on the driver's side
- Remove the fuel-tank sending unit according to the manufacturer's instructions (with gasoline only).

Remove page 32 "Operating Instructions for End Customer" and add to the vehicle operating instructions.

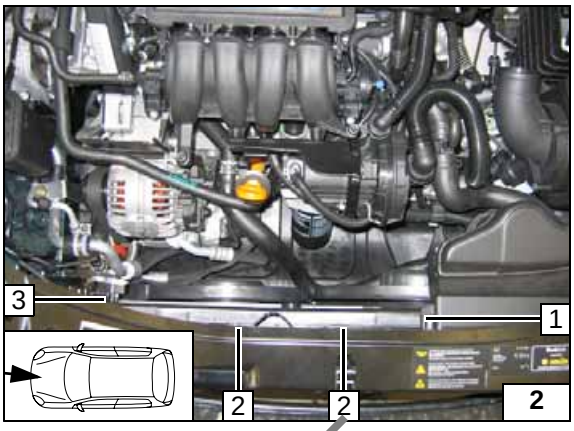
Heater unit installation location

1 Heater unit

Installation location

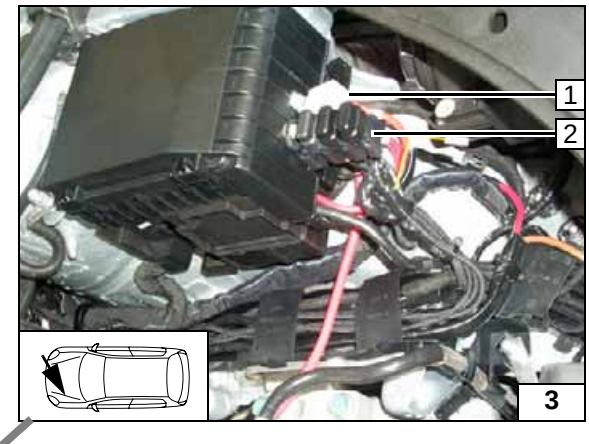
Electrical system

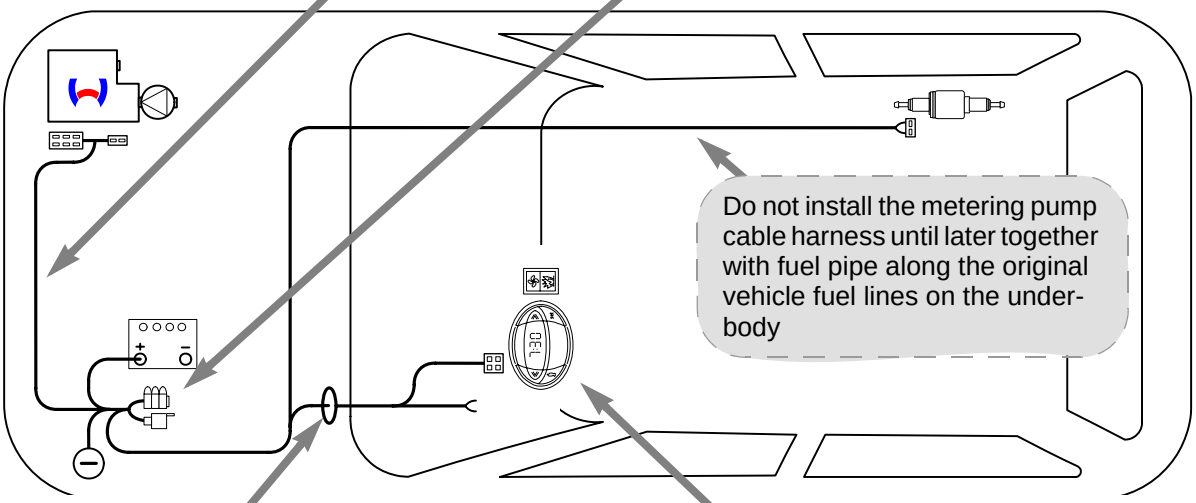
Wiring harness of heater unit
Guide wiring harness of heater unit **2** in front of radiator at position **1** and route to right along upper edge of radiator. Then route into engine compartment again at position **3**. Fastening is not carried out until after heater unit is installed!



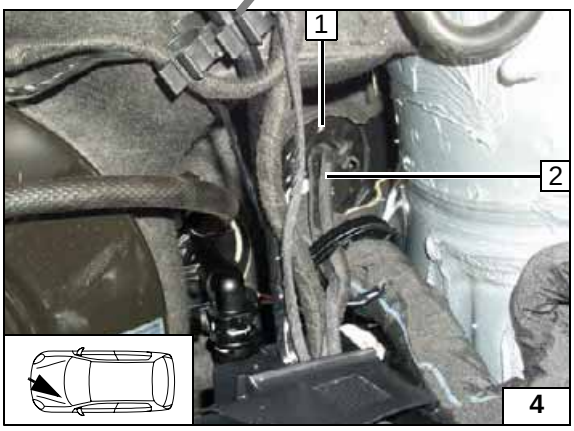
Fuse holder, relay K3
For information on installing fuse holder and K3 relay, see page 7.

1 Relay K3
2 Fuse holder





Wiring harness installation diagram



Wiring harness pass through

1 Original vehicle wiring harness pass through
2 Wiring harnesses for fan controller and heater control

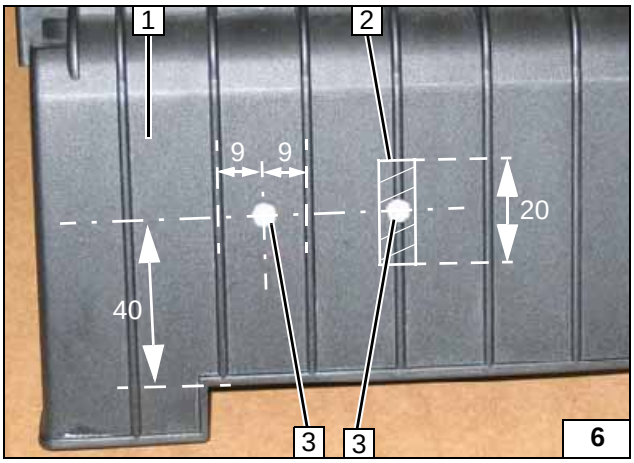
Digital timer, summer/winter switch option

1 Digital timer
2 Summer/winter switch, drilled hole 12 mm dia.

Fuse holder and relay K3

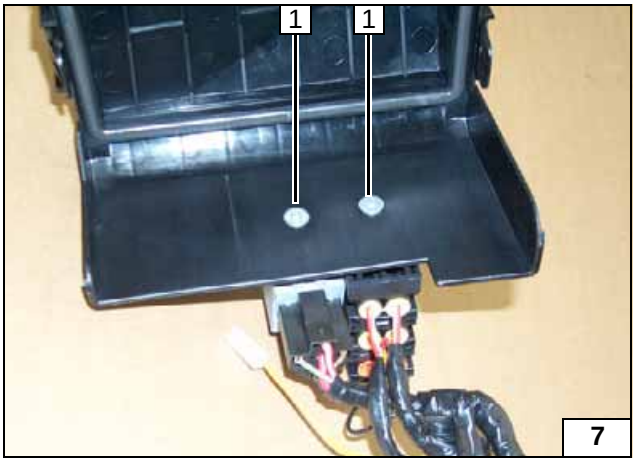
Countersink holes **3** from behind for M5 countersunk head screws.

1 Cover of fuse/relay carrier in engine compartment
2 Cut away bar in shaded area
3 5.0 mm dia. hole [2x]



Holes for fuse holder and K3 relay

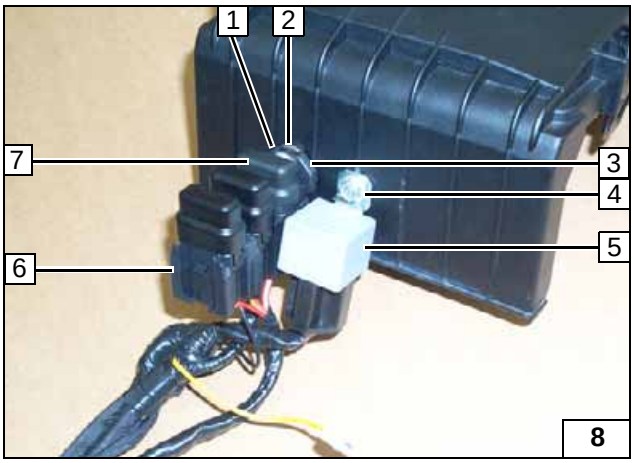
1 M5x12 countersunk head screw [2x]



Installing fuse holder and K3 relay

On vehicles with Climatronic, replace 25 A fuse F3 **7** with 3 A fuse provided.

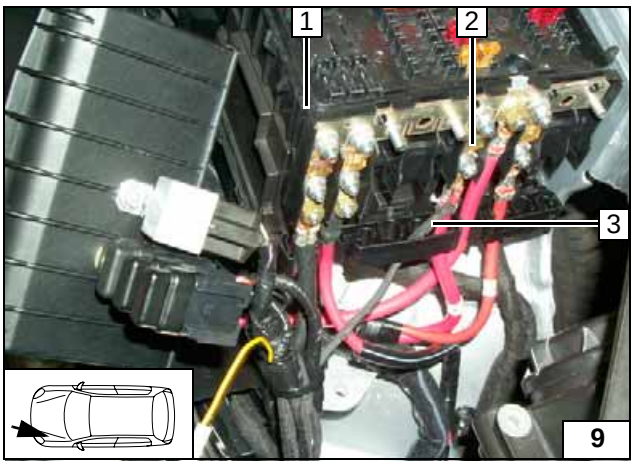
1 M5 flanged nut
2 Large diameter washer (between cover and retaining plate)
3 Retaining plate
4 M5 flanged nut
5 Relay K3
6 Fuse holder



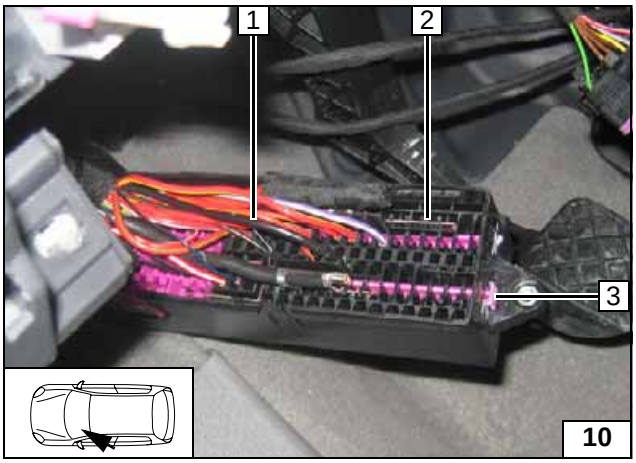
Installing fuse holder and K3 relay

Route brown (br) ground wire to original vehicle ground support point below headlight and connect.

1 Fuse/relay carrier
2 Original main vehicle fuse
3 Red (rt) positive wire



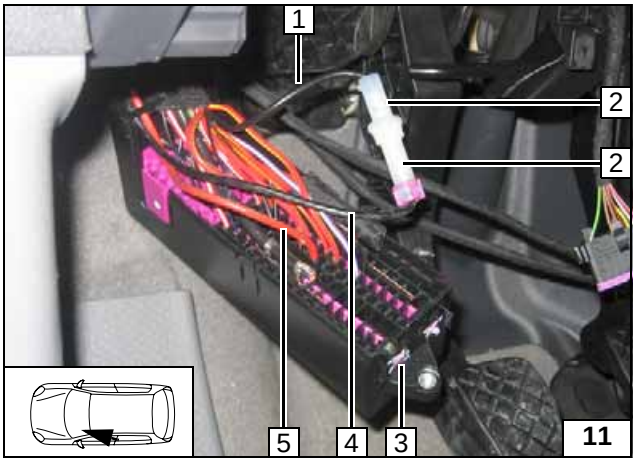
Connecting positive and ground wire



Climatic fan controller

Fuse socket dependent on vehicle equipment SC33 or SC35; wire color black (sw) or black/yellow (sw/ge).
Detach original vehicle fuse carrier **2** (instrument panel at lower left) and unlock contact lock **3**.
Uncrimp black (sw) or black/yellow (sw/ge) wire **1** on fuse output SC33 or SC35.

Uncrimping wire

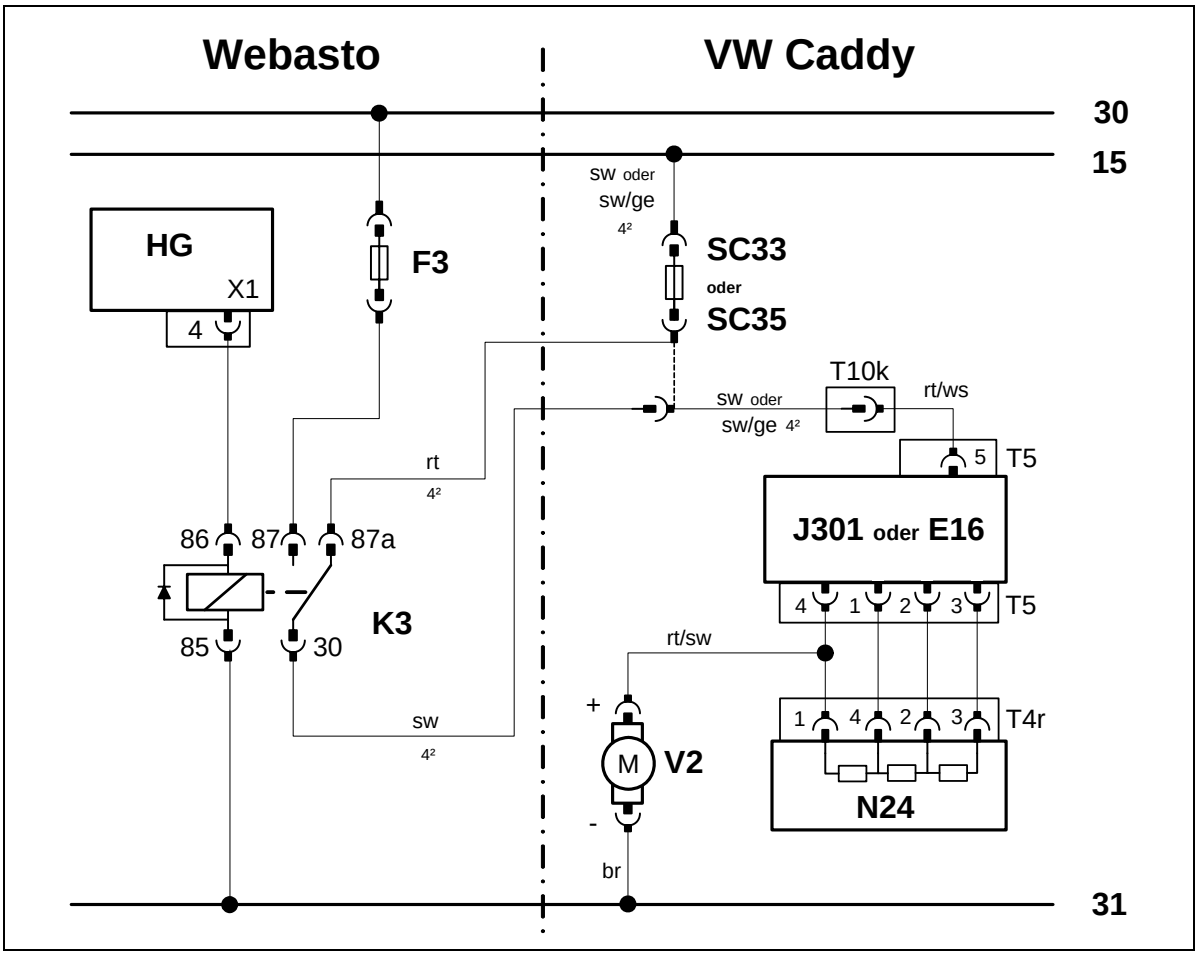


Produce connection as shown in wiring diagram.

1 Black (sw) or black/yellow (sw/ge) wire with original standard power timer
2 AMP housing [2x]
3 Contact lock locked
4 Black (sw) wire to K3/30
5 Red (rt) wire from K3/87a with standard power timer engaged in fuse output SC33 or SC35

Installing wiring harness

Climatic fan controller

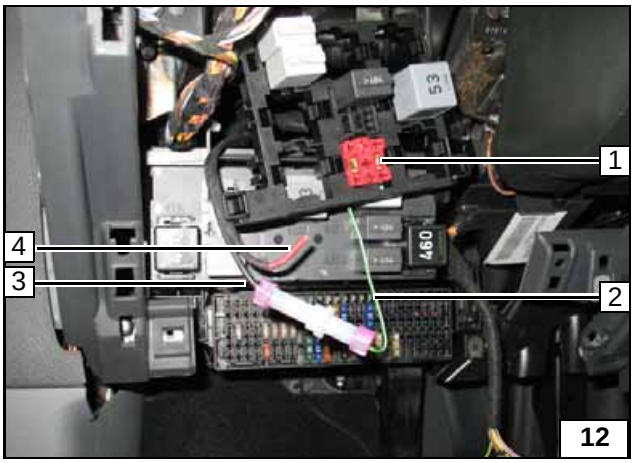


Webasto components		Vehicle components		Colors and symbols	
HG	Heater unit TT-C/E	SC33	Fan fuse	rt	red
X1	6-pin heater unit connector	SC35	Fan fuse	ws	white
F3	25 A fuse	J301	Control unit of air conditioning	sw	black
K3	Fan relay	E16	Heater switch	br	brown
		N24	Resistor group	ge	yellow
		V2	Fan motor		
		T...	Plug connections		

Wiring diagram

Legend

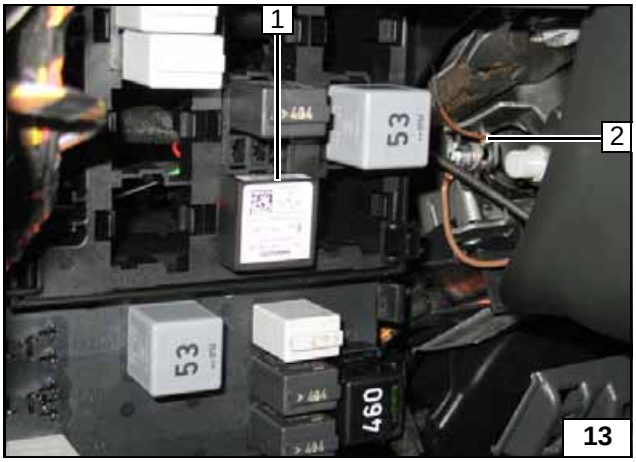
Climatronic fan controller



Produce connections as shown in wiring diagram.
Position of free sockets dependent on vehicle equipment.
Connect black (sw) wire from K3/30 **3** to green/white (gn/ws) wire **2** (AMP connector).
Insulate red (rt) wires K3/87a **4** and tie back.

1 IPCU socket

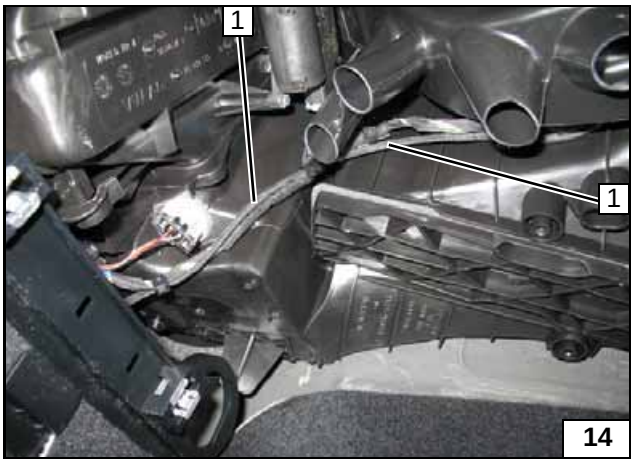
Installing wiring harness of Climatronic



Fasten brown (br) wire IPCU/85 **2** on original vehicle ground point.

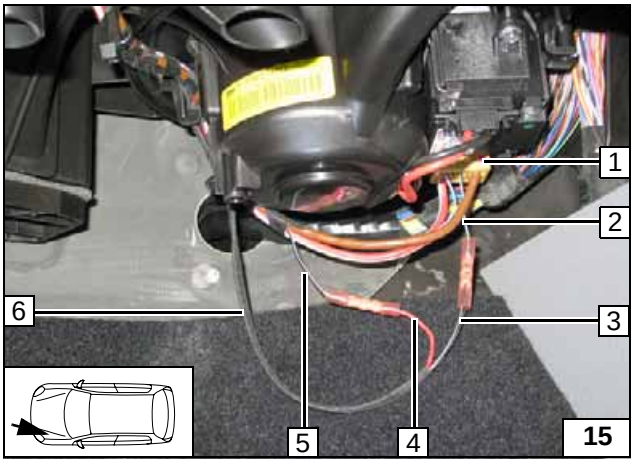
1 IPCU

Installing ground wire



Route wiring harness from IPCU **1** to original vehicle wires to fan unit.

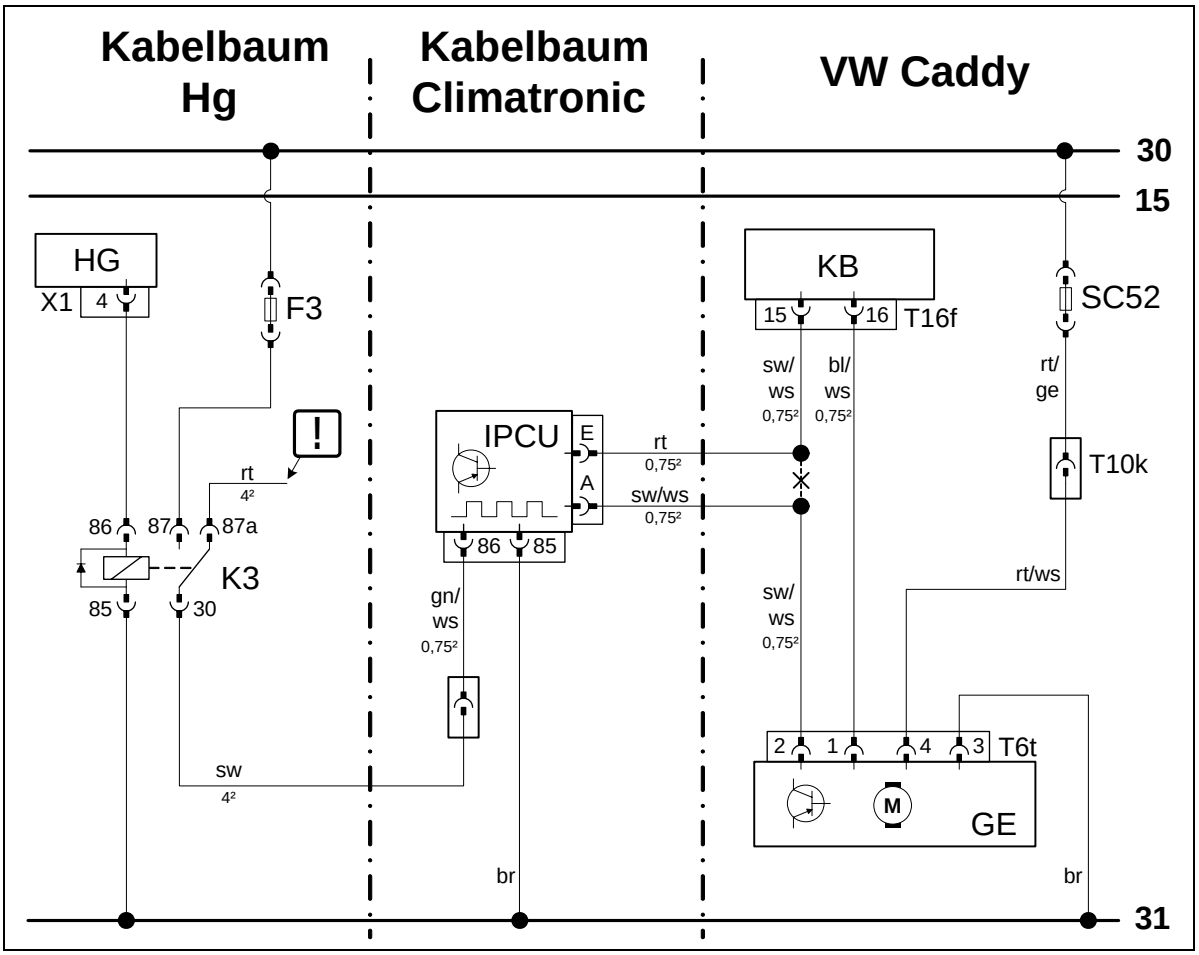
Routing wiring harness of IPCU



1 Connector T6t
2 Black/white (sw/ws) wire to connector T6t/2
3 Black/white (sw/ws) wire from IPCU/A
4 Red (rt) wire from IPCU/E
5 Black/white (sw/ws) wire from Climatronic control unit
6 Wiring harness from IPCU

Connecting wires

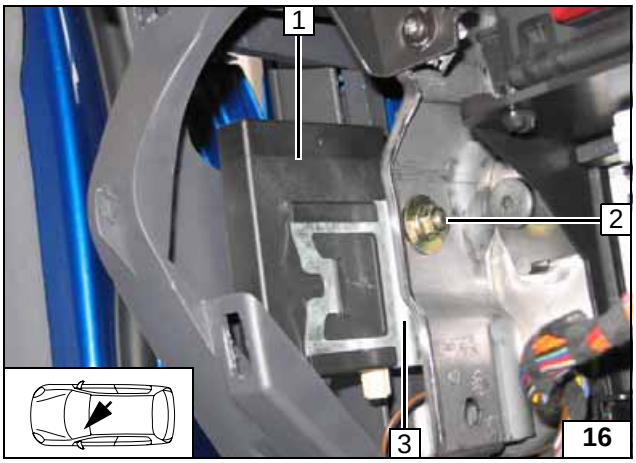
Climatronic fan controller



Webasto components		Vehicle components		Colors and symbols	
HG	Heater unit TT-C/E	SC52	Fan fuse	rt	red
X1	6-pin heater unit connector	KB	Air-conditioning control panel	ws	white
F3	Replace 25 A fuse F3 with 3 A fuse.	ge	Fan controller	sw	black
		T...	Plug connections	br	brown
K3	Fan relay			gn	green
IPCU	Pulse width modulator			bl	blue
IPCU adjustment values:				ge	yellow
Duty cycle:	30 %			!	Insulate wire ends and tie back
Frequency:	400 Hz				
Voltage:	8 V			**X**	Cutting point
Function:	High-side				

Wiring diagram

Legend

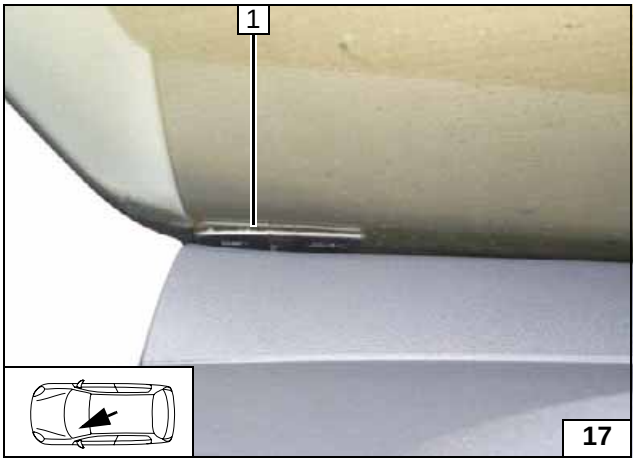


Remote option (Telestart)

Drill out upper hole of bracket to 6.5 mm dia.

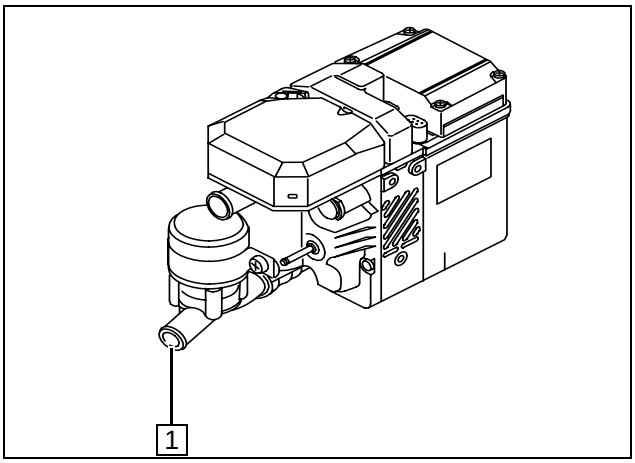
Installing receiver

1 Receiver
2 Mount M6x12 bolt, large diameter washer, flanged nut in existing hole
3 Bracket



Installing antenna

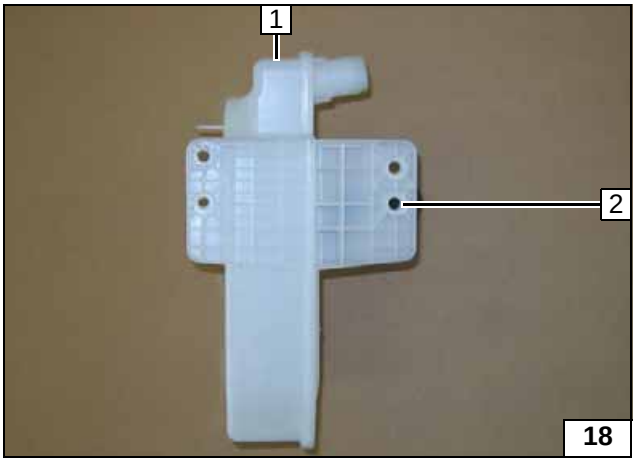
1 Antenna



Preparing heater unit

1 Replace circulating pump cover with cover with straight inlet

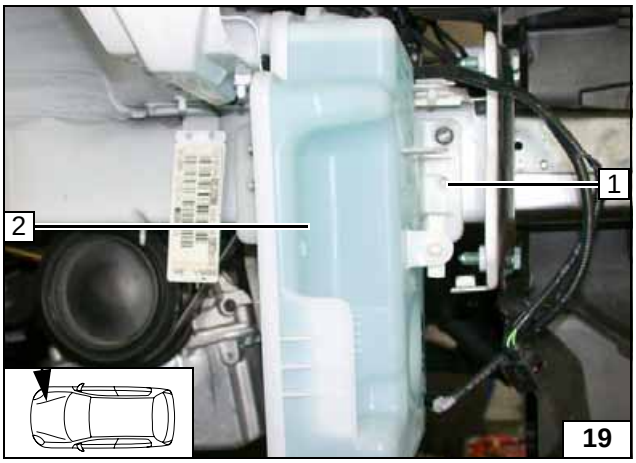
Converting circulating pump



Preparing installation location

1 Washer reservoir
2 Drill 6.5 mm dia. hole

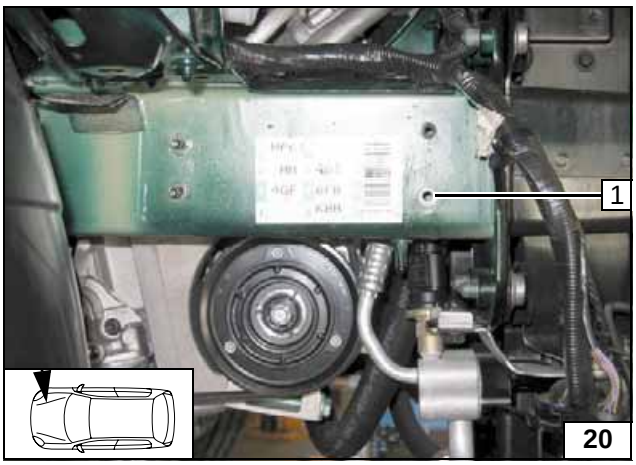
Preparing washer reservoir



Install washer reservoir and copy hole pattern.

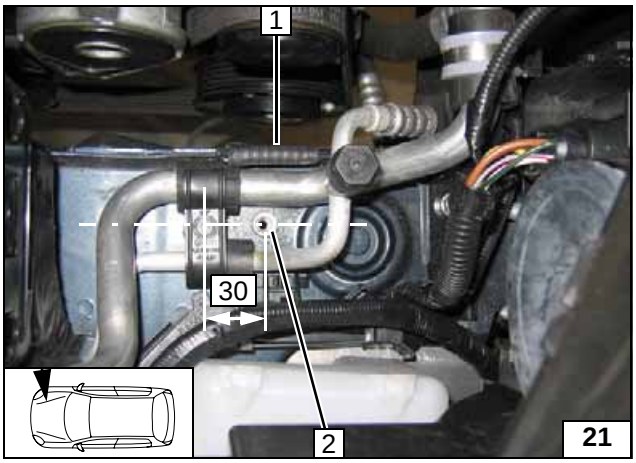
1 Hole pattern, 9.1 mm dia. hole
2 Washer reservoir

Copying hole pattern



1 M6 rivet nut

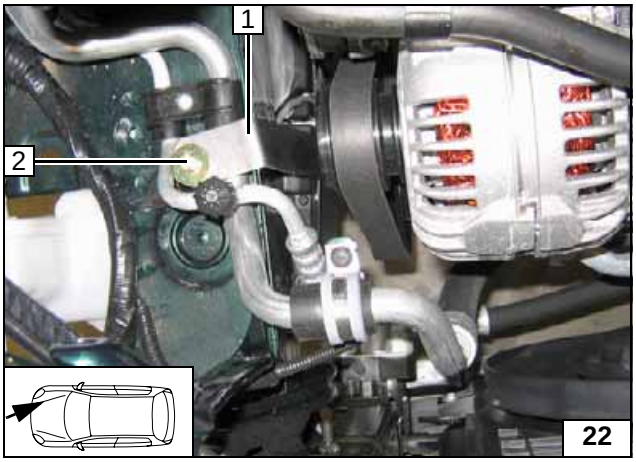
Installing rivet nut



Position rivet nut in center between A/C lines.

1 Edge protection 50
2 9.1 mm dia. hole; M6 rivet nut

Installing rivet nut

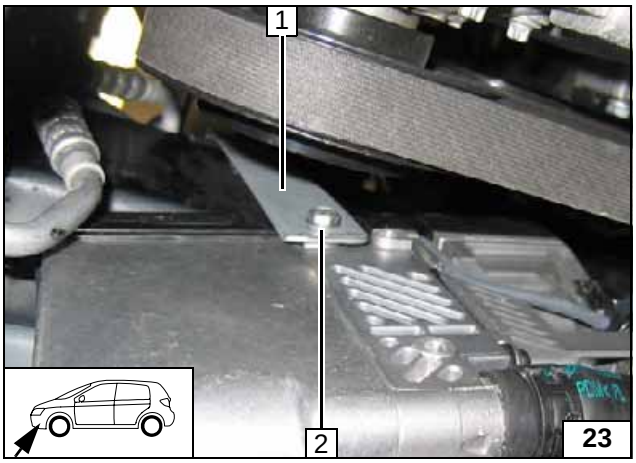


Installing heater unit

Loosely mounting strut

1 Strut
2 M6x35 bolt, spring lockwasher, large diameter washer, 5 mm shim, 20 mm shim

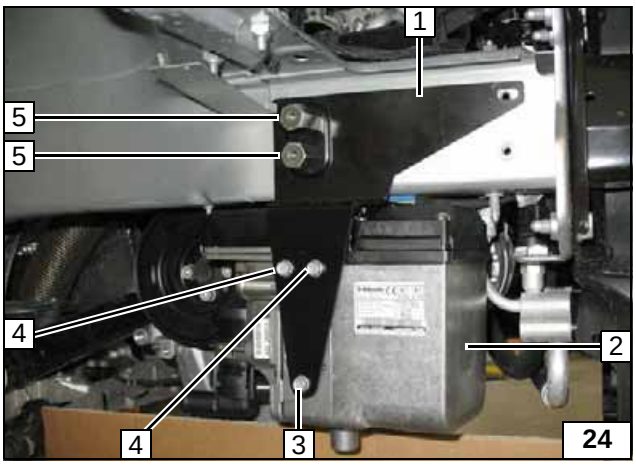
Installing strut



Connect connector on heater unit.
Loosely mount heater unit on strut.

1 Strut
2 Ejot screw

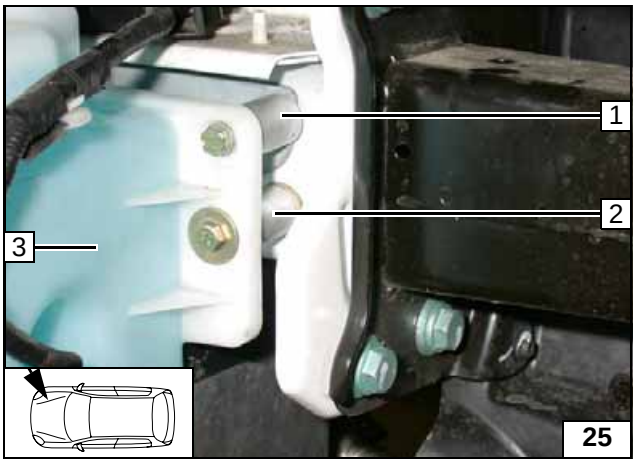
Installing heater unit



Insert two washers between heater unit **2** and bracket **1** at position **3**.
Tighten all screw connections between bracket, strut, heater unit and body.

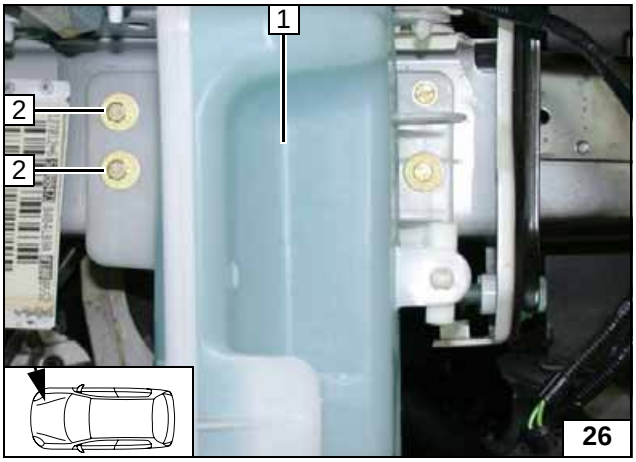
4 Ejot screw [2x]
5 Original vehicle stud bolt, M6x30 spacer nut [2x]

Installing heater unit



1 M6x60 bolt, spring lockwasher, washer, 30 mm spacer, existing threaded hole
2 M6x60 bolt, spring lockwasher, large diameter washer, 30 mm spacer, large diameter washer, rivet nut
3 Washer reservoir

Installing washer reservoir



1 Washer reservoir
2 M6x25 bolt, spring lockwasher, large diameter washer [2x each], premount spacer nuts

Installing washer reservoir

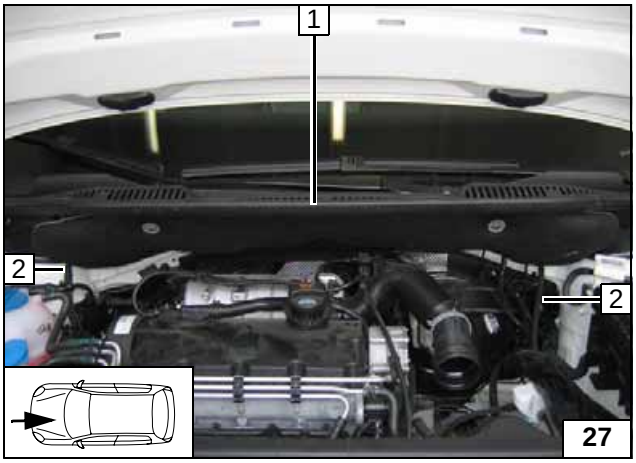
Fuel

CAUTION!
Open the vehicle's fuel tank cap, ventilate the tank and then re-close the tank lock.

Catch any fuel running off with an appropriate container.

Install fuel line and metering-pump wiring harness so that they are protected against stone impact. Unless specified otherwise, always fasten using cable ties.
Mount the fuel line and wiring harness with rub protection on sharp edges.

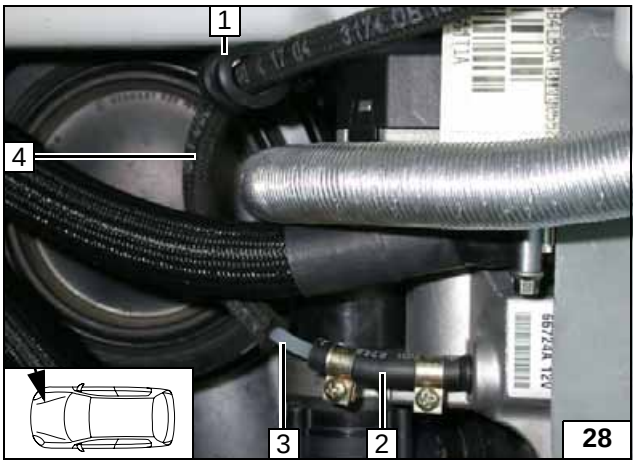
WARNING!
The fuel line and wiring harness are routed to the metering pump in as shown in the wiring harness routing diagram.



Installing wiring harness of metering pump

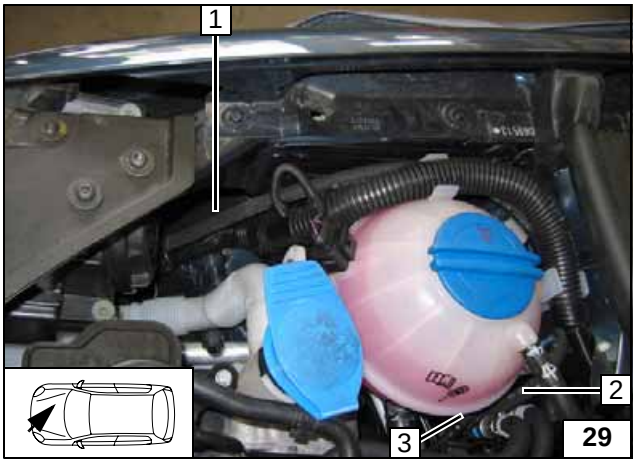
Route wiring harness of metering pump in coolant reservoir to right and secure on original vehicle lines with cable ties.
Pay particular attention to freedom of movement of wiper linkage.

1 Coolant reservoir cap
2 Metering pump wiring harness



Connection to heater unit

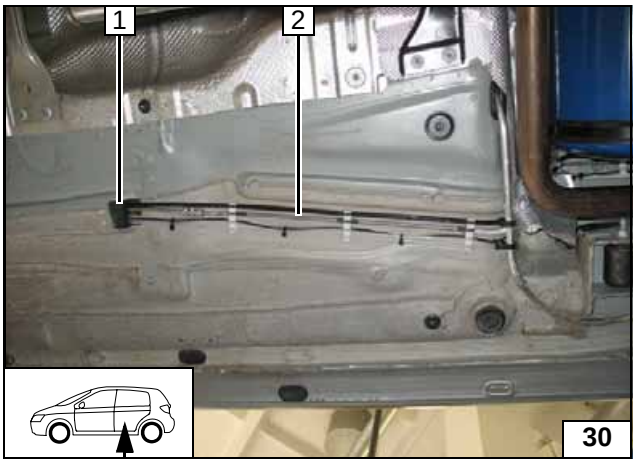
1 15 mm dia. rubber-coated p-clamp, plastic nut on original vehicle stud bolt
2 Hose section, 10 mm dia. clamp [2x]
3 Fuel line
4 Cloth protective hose cut to 1,100 mm length



Installing lines

Guide fuel line **1** and wiring harness of metering **2** into original vehicle line duct **3** and route to underbody.

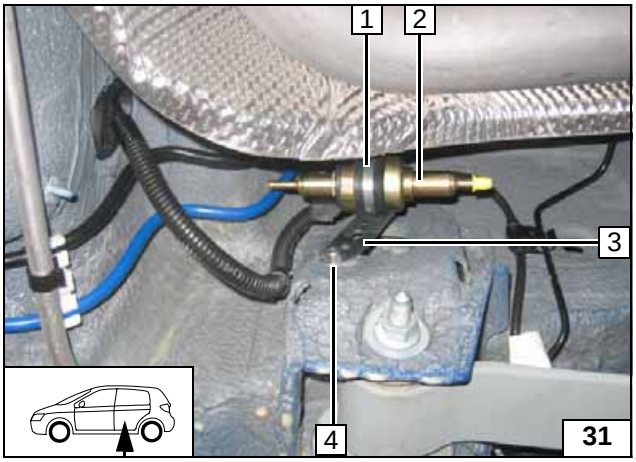
1 Fuel line in protective hose



Route fuel line and wiring harness of metering pump along original vehicle fuel lines **2** to rear.

1 Line duct

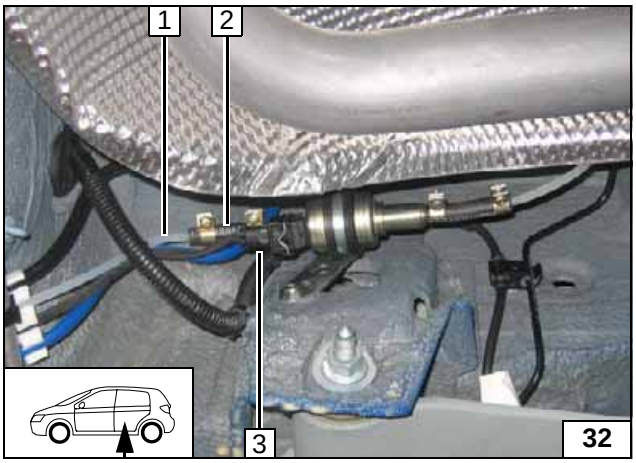
Installing lines



Metering pump of 1.6 liter gasoline and diesel engine

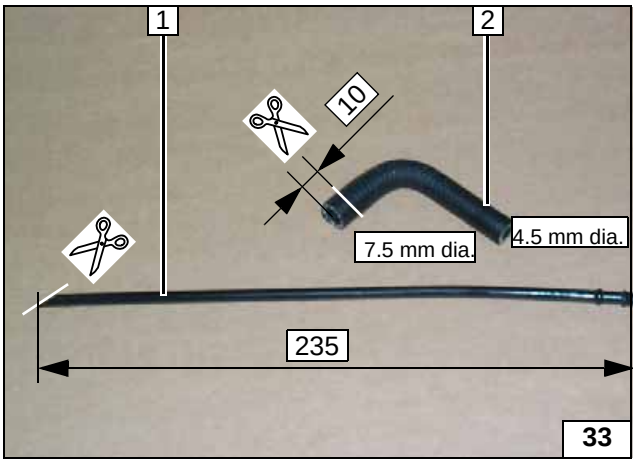
1 Rubber-coated p-clamp, silent block, flanged nut [2x]
2 Metering pump
3 Perforated bracket
4 Mount M6x20 bolt, large diameter washer, M6 flanged nut in existing hole

Installing metering pump



1 Fuel line
2 Hose section, 10 mm dia. hose clamp [2x]
3 Wiring harness of metering pump, connector mounted

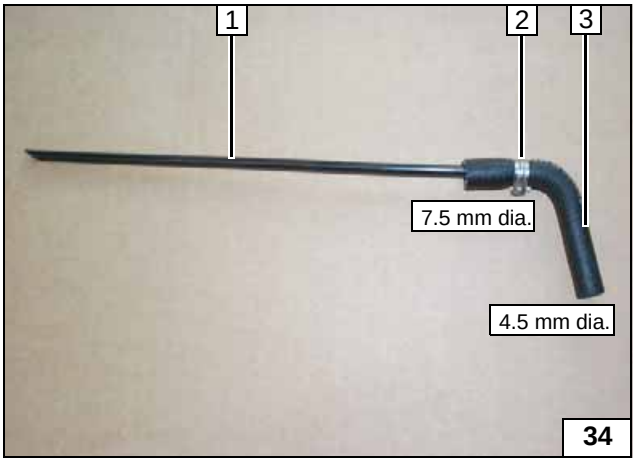
Connecting metering pump



Preparing fuel standpipe

1 Standpipe
2 Molded hose

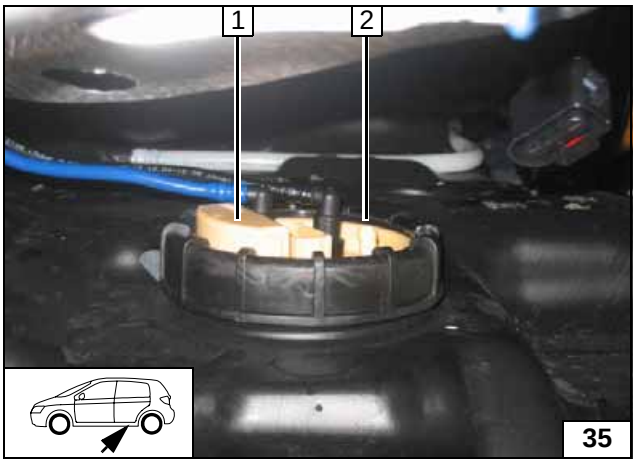
Cutting standpipe and molded hose to length



10 mm dia. Caillau clamp **2** in center between beads on end of standpipe.

1 Standpipe
3 Molded hose

Premounting standpipe and molded hose

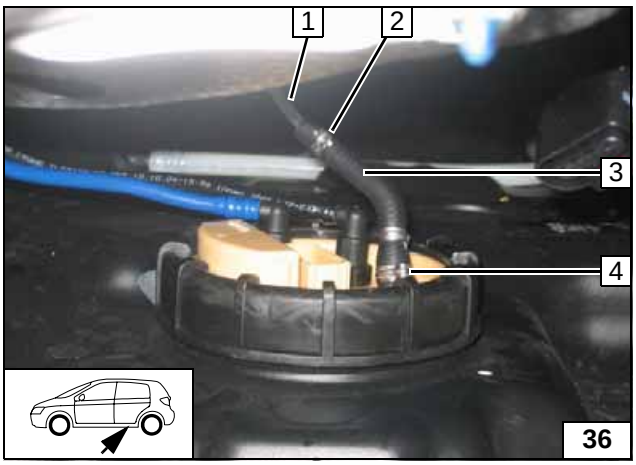


Fuel removal on diesel engines

Lower fuel tank in accordance with manufacturer's specifications.
Cut 3 mm off blind plug.

1 Fuel sender
2 Tip cut off blind plug

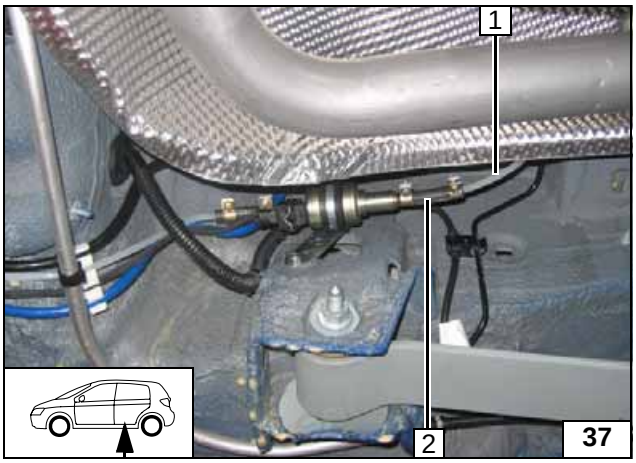
Cutting off blind plug



Should the standpipe be slightly curved on delivery, then it must be aligned so that the end points toward the rear right.
Otherwise there is a danger of the fuel gauge being impaired.

1 Remaining section of fuel line
2 10 mm dia. Caillau clamp
3 Preassembled molded hose with standpipe
4 13.5 mm dia. Caillau clamp

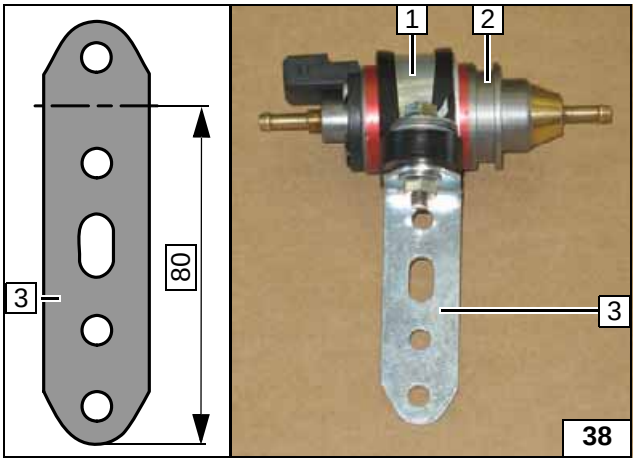
Connecting fuel-tank sending unit



Check the position of the components; adjust if necessary. Check that they have free clearance.

1 Fuel line from fuel-tank sending unit
2 Hose section**,** 10 mm dia. hose clamp [2x]

Connecting metering pump

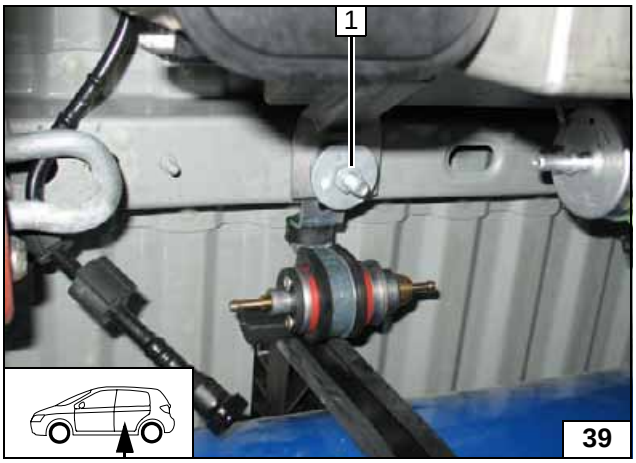


Metering pump of Eco Fuel

Angle down perforated bracket **3** by 90°.

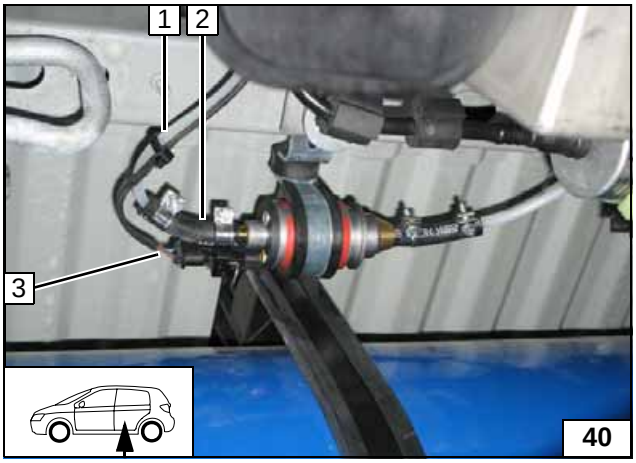
1 Rubber-coated p-clamp, silent block, flanged nut [2x]
2 Metering pump

Premounting metering pump



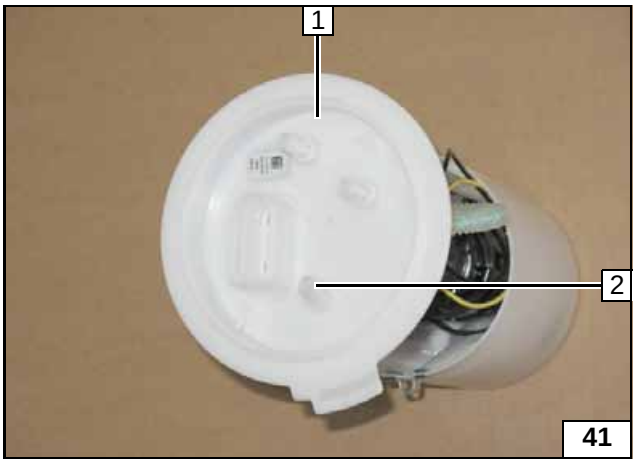
1 Original vehicle stud bolt from fuel tank

Installing metering pump



1 Fuel line
2 Hose section, 10 mm dia. hose clamp [2x]
3 Wiring harness of metering pump, connector mounted

Connecting metering pump

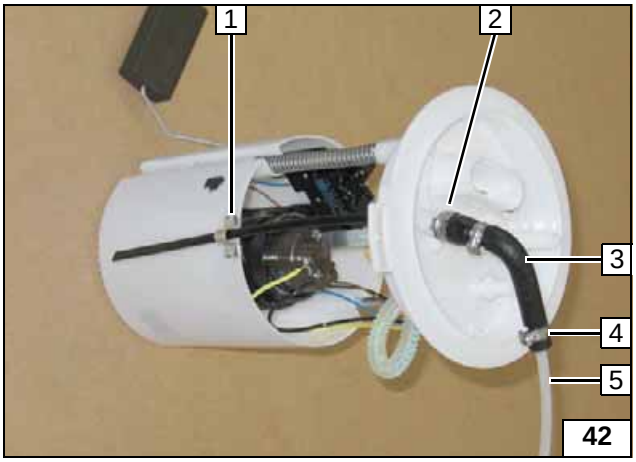


Fuel standpipe of 1.6 liter gasoline and 2.0 liter Eco Fuel

Remove the fuel tank according to the manufacturer's instructions.
Cut 3 mm off blind plug.

1 Fuel sender
2 Tip cut off blind plug

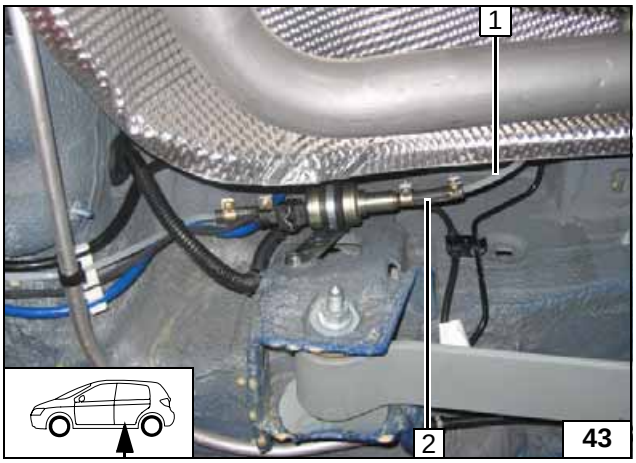
Cutting off blind plug



Position guide clip **1** for standpipe.
Reinstall fuel tank in accordance with manufacturer's instructions.

2 13.5 mm dia. Caillau clamp
3 Preassembled molded hose with standpipe
4 10 mm dia. Caillau clamp
5 Remaining section of fuel line

Connecting fuel-tank sending unit

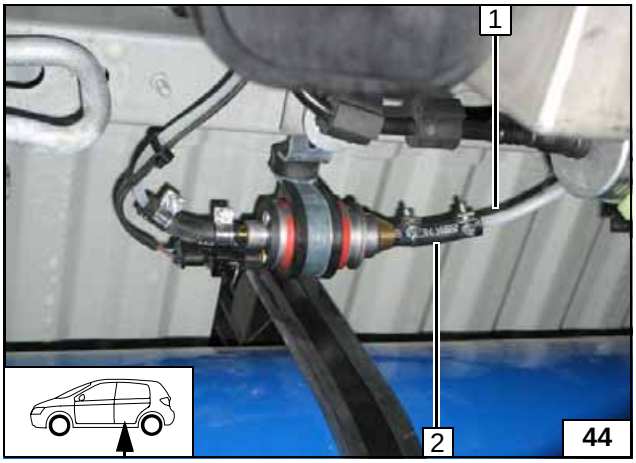


1.6 liter gasoline

Check the position of the components; adjust if necessary. Check that they have free clearance.

1 Fuel line from fuel-tank sending unit
2 Hose section**,** 10 mm dia. hose clamp [2x]

Connecting metering pump



2.0 liter Eco Fuel

Check the position of the components; adjust if necessary. Check that they have free clearance.

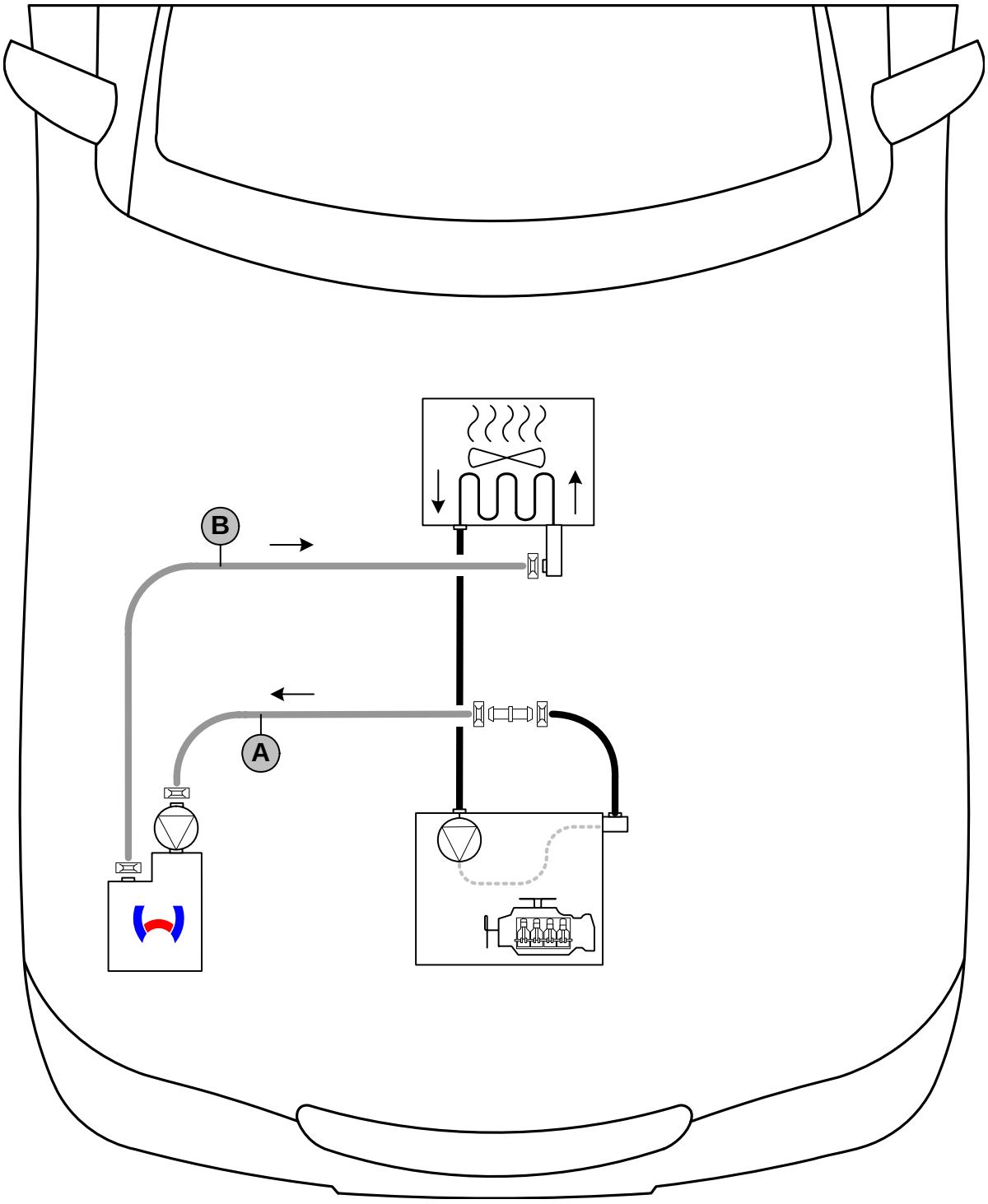
1 Fuel line from fuel-tank sending unit
2 Hose section**,** 10 mm dia. hose clamp [2x]

Connecting metering pump

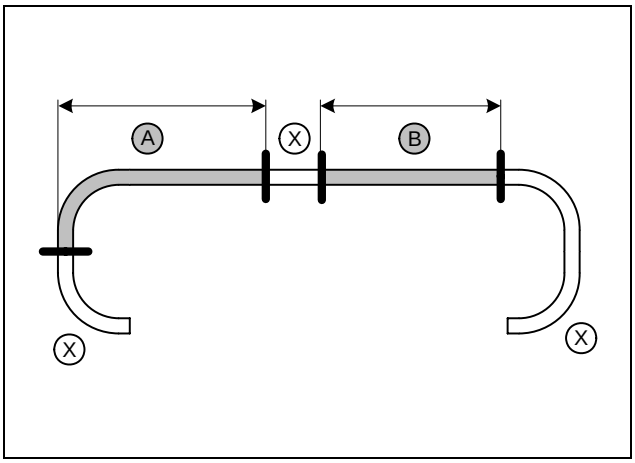
Coolant for gasoline engine

WARNING!
Any coolant running off should be collected using an appropriate container. Install hoses so that they are kink-free. Unless specified otherwise, always fasten using cable ties. Position clamps so that no other hose can be damaged! When installing the coolant hose, the heater unit must be filled with coolant.
The connection should be "inline" based on the following diagram:

Coolant routing diagram



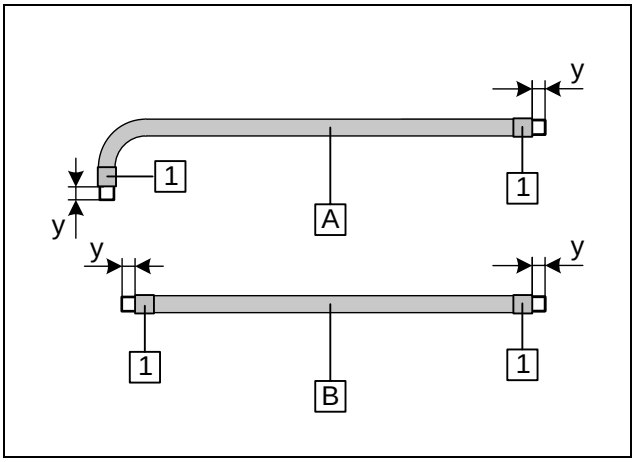
All spring clips without a specific designation = 27 mm dia. All connecting pipes = 20x20 dia.



a = 940
b = 1000

Discard section **X**

Cutting coolant hoses to length

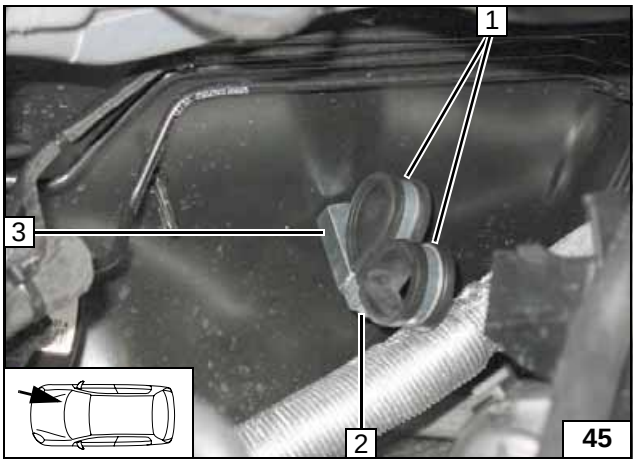


Push braided protection hoses onto hose **A** and **B** and cut to length.
Cut heat shrink plastic tubing to length.

y = 25

1 50 mm long heat shrink plastic tubing [4x]

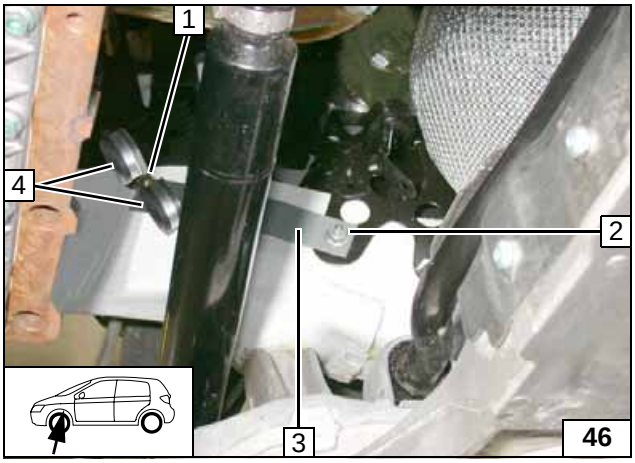
Preparing coolant hoses



Loosely mount bolt **2**!

1 29 mm dia. rubber-coated p-clamp [2x]
2 M6x20 bolt, spring lockwasher
3 40 mm spacer nut, original vehicle stud bolt

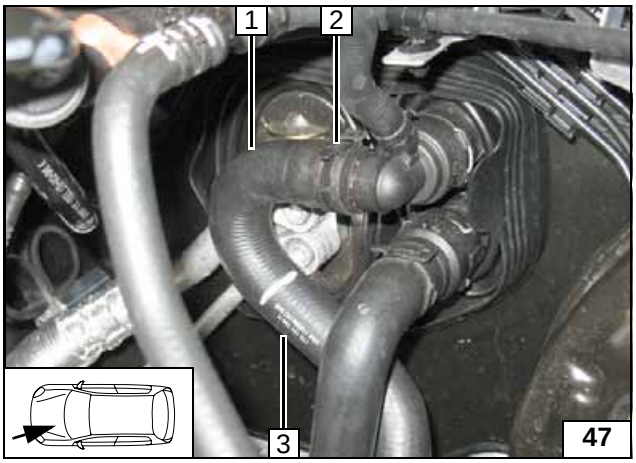
Premounting hose guide



Loosely mount bolt **1.**

1 M6x20 bolt, flanged nut
2 Original vehicle M8 nut
3 Strut
4 29 mm dia. rubber-coated p-clamp [2x]

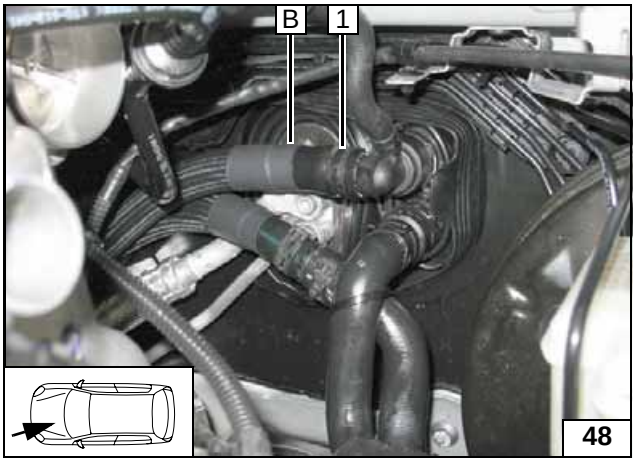
Premounting hose guide



Spring clip **2** will be reused.

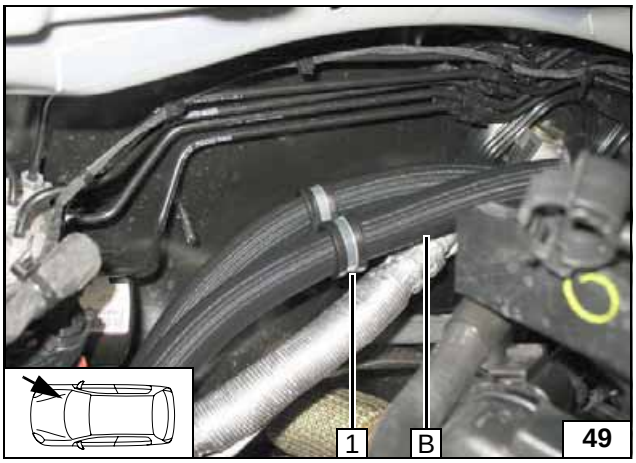
1 Pull off original vehicle hose section to heat exchanger inlet and discard
3 Original vehicle hose section from engine outlet

Cutting point



1 Original vehicle spring clip

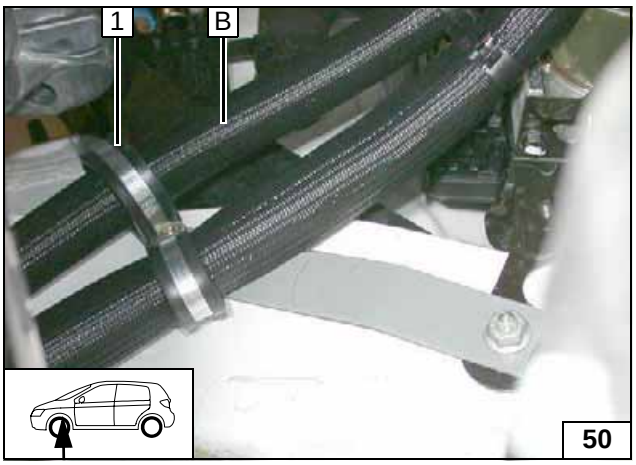
Connecting heat exchanger inlet



Route hose **B** through front p-clamp.

1 29 mm dia. rubber-coated p-clamp

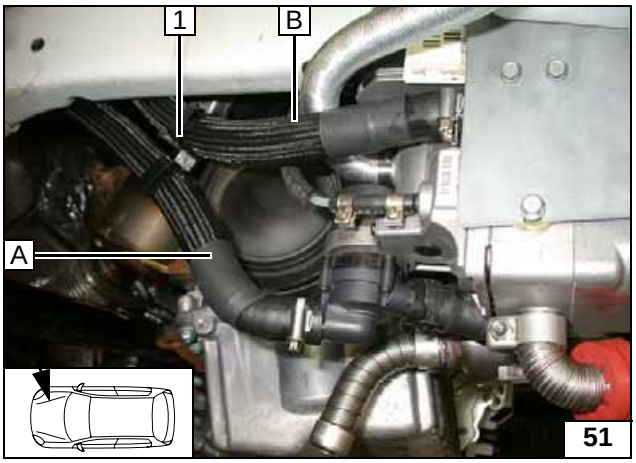
Hose routing



Route hose **B** through upper p-clamp.

1 29 mm dia. rubber-coated p-clamp

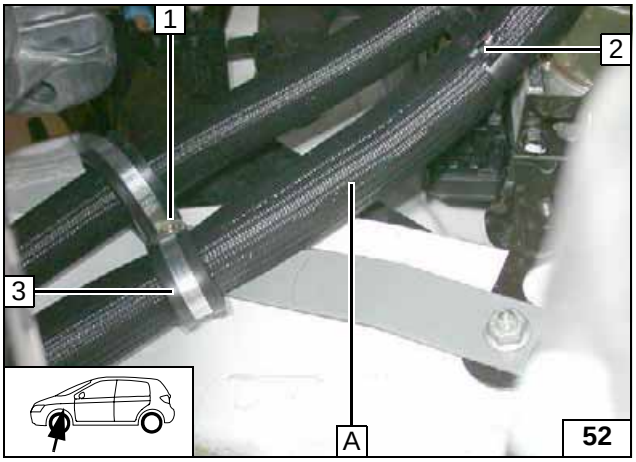
Hose routing



Hose **A** with 90° elbow on heater unit inlet!

1 27x27 double clip, lockable

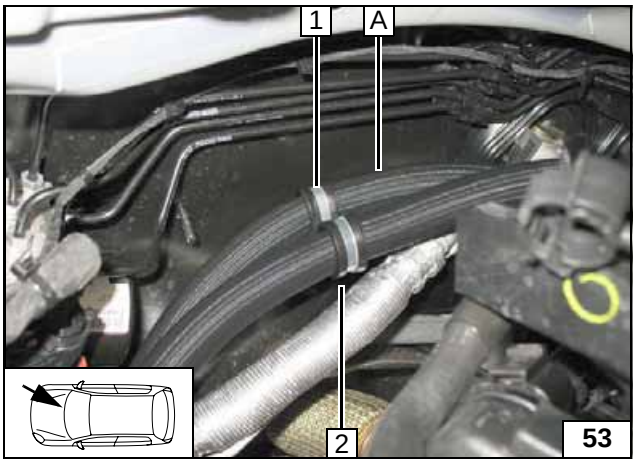
Connecting heater unit



Route hose **A** through lower p-clamp. After routing, tighten M6x20 bolt and flanged nut at position **1**.

2 27x27 double clip, lockable
3 29 mm dia. rubber-coated p-clamp (pre-mounted)

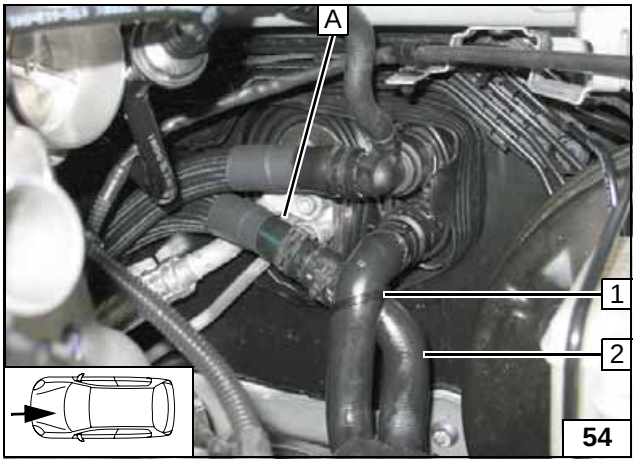
Hose routing



Route hose **A** through rear p-clamp. After routing, tighten M6x20 bolt and flanged nut at position **2** (concealed).

1 29 mm dia. rubber-coated p-clamp

Hose routing



Check routing of hoses **A** **a**nd **B** along entire length and correct if necessary.

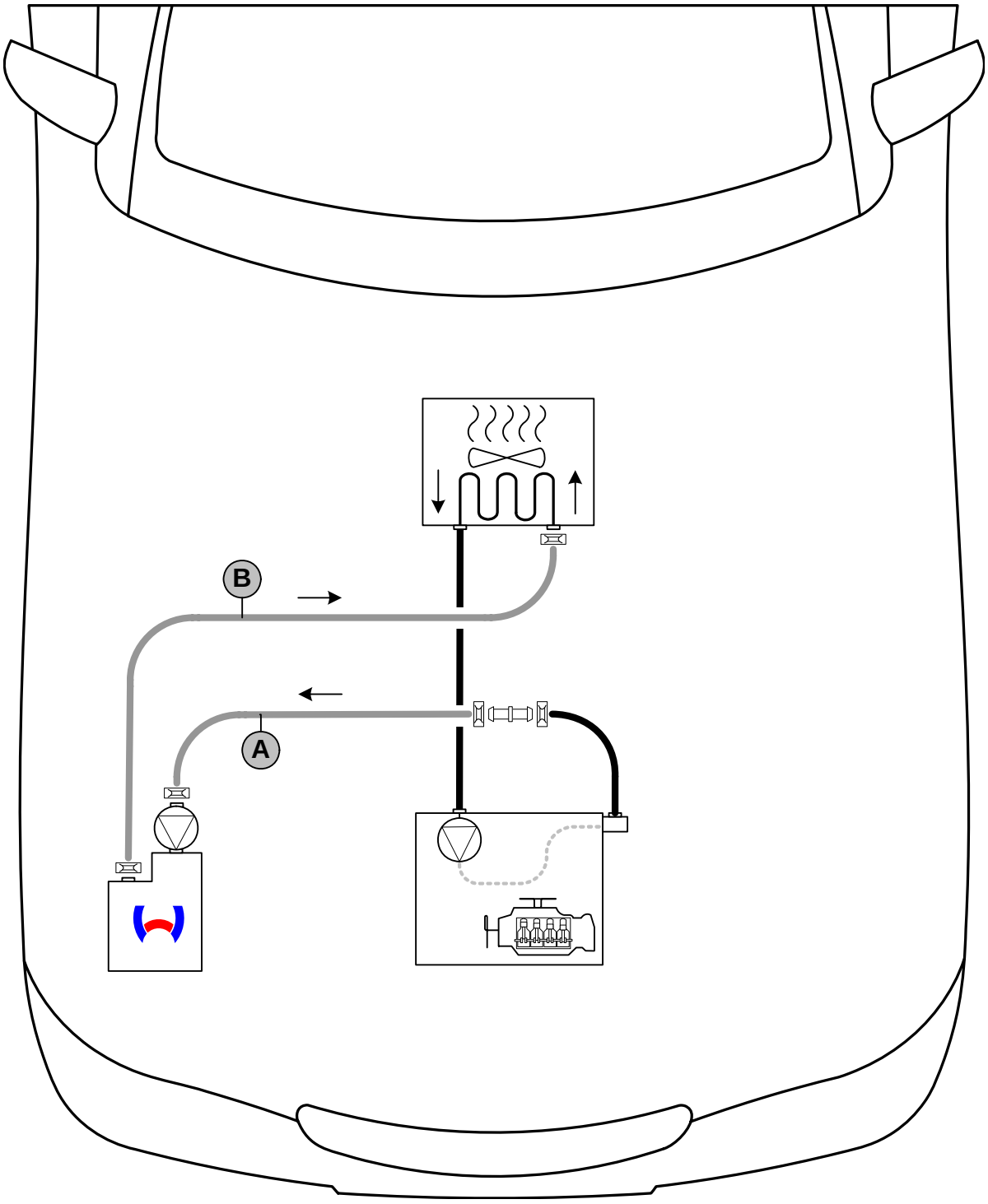
1 Cable tie
2 Original vehicle hose from engine outlet

Connecting engine outlet

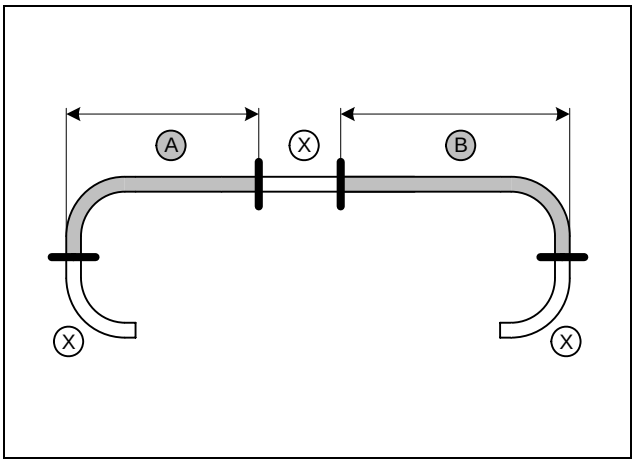
Coolant for diesel engine

WARNING!
Any coolant running off should be collected using an appropriate container. Install hoses so that they are kink-free. Unless specified otherwise, always fasten using cable ties. Position clamps so that no other hose can be damaged! When installing the coolant hose, the heater unit must be filled with coolant.
The connection should be "inline" based on the following diagram:

Coolant routing diagram



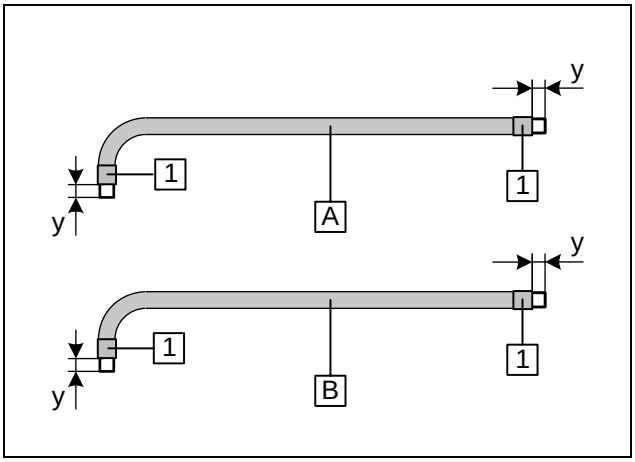
All spring clips without a specific designation = 27 mm dia. All connecting pipes = 20x20 dia.



a = 900
b = 950

Discard section **X**

Cutting coolant hoses to length

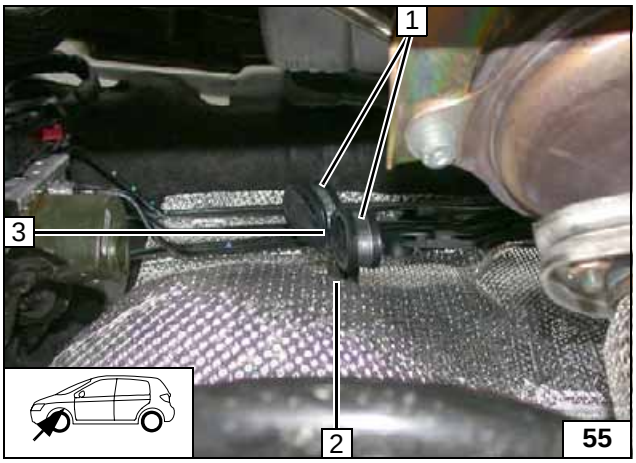


Push braided protection hoses onto hose **A** and **B** and cut to length.
Cut heat shrink plastic tubing to length.

y = 25

1 50 mm long heat shrink plastic tubing [4x]

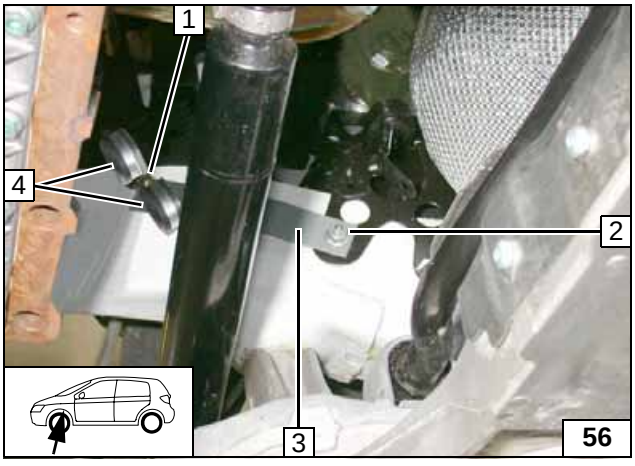
Preparing coolant hoses



Loosely mount bolt **3.**

1 29 mm dia. rubber-coated p-clamp [2x]
2 Large diameter washer, 40 mm spacer nut, original vehicle stud bolt
3 M6x20 bolt, spring lockwasher

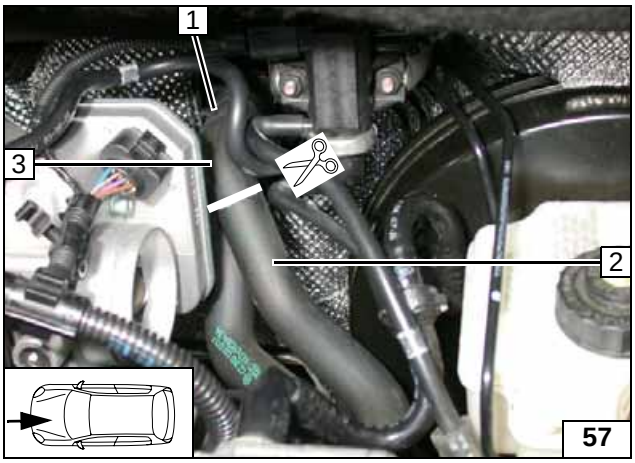
Premounting hose guide



Loosely mount bolt **1.**

1 M6x20 bolt, flanged nut
2 Original vehicle M8 nut
3 Strut
4 29 mm dia. rubber-coated p-clamp [2x]

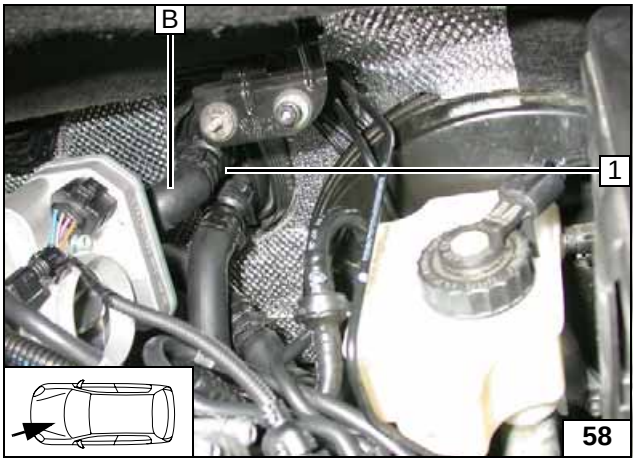
Premounting hose guide



Spring clip **1** will be reused.

2 Original vehicle hose section from engine outlet
3 Pull off original vehicle hose section to heat exchanger inlet and discard

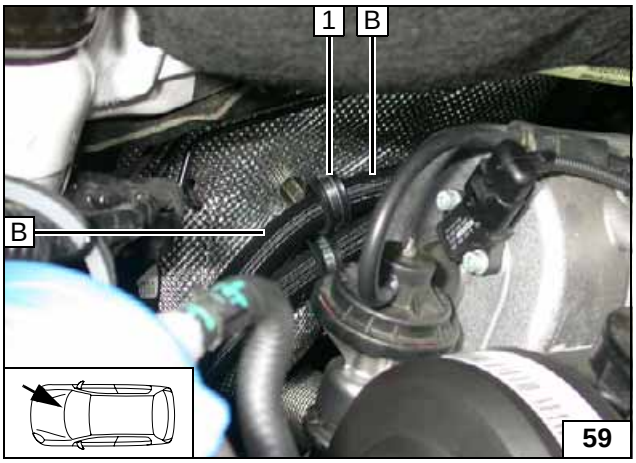
Cutting point



Hose **B** with 90° elbow on heat exchanger inlet!

1 Original vehicle spring clip

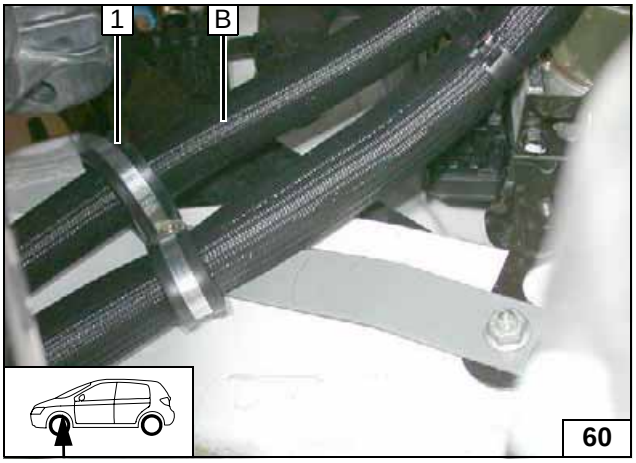
Connecting heat exchanger inlet



Route hose **B** through upper p-clamp.

1 29 mm dia. rubber-coated p-clamp

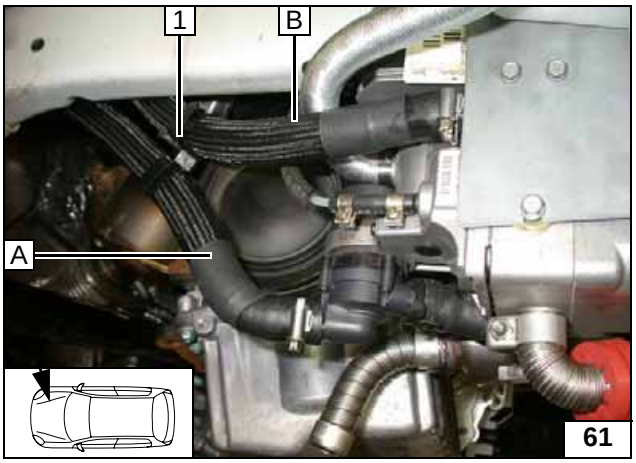
Hose routing



Route hose **B** through upper p-clamp.

1 29 mm dia. rubber-coated p-clamp

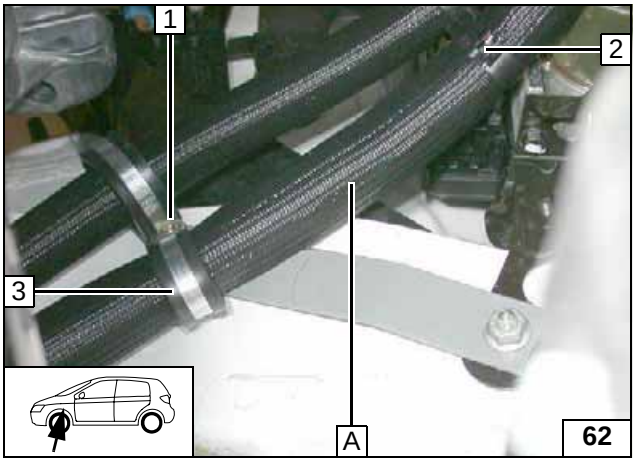
Hose routing



Hose **A** with 90° elbow on heater unit inlet!

1 27x27 double clip, lockable

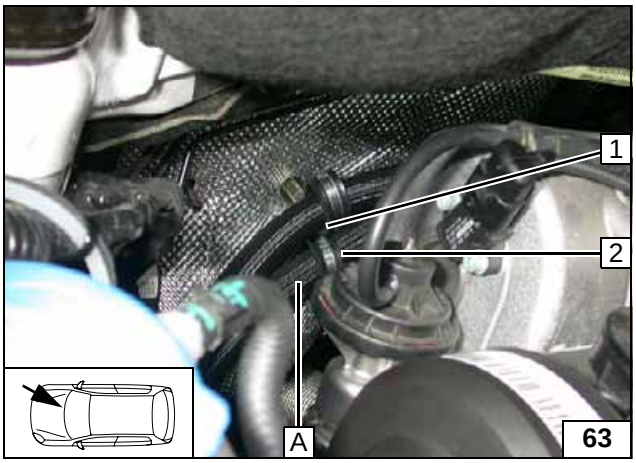
Connecting heater unit



Route hose **A** through lower p-clamp. After routing, tighten M6x20 bolt and flanged nut at position **1**.

2 27x27 double clip, lockable
3 29 mm dia. rubber-coated p-clamp

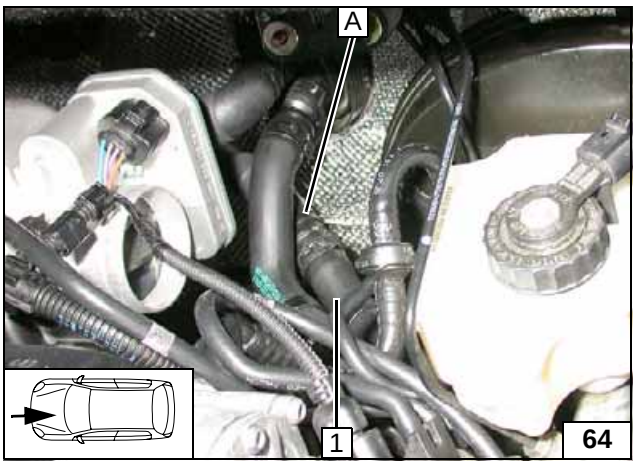
Hose routing



Route hose **A** through lower p-clamp. After routing, tighten M6x20 bolt and flanged nut at position **1**.

2 29 mm dia. rubber-coated p-clamp

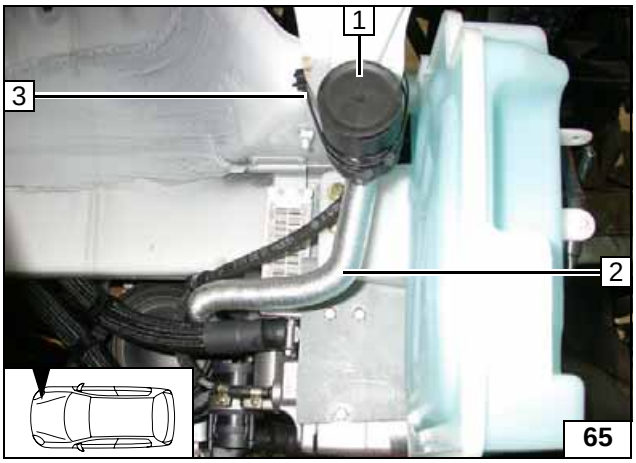
Hose routing



Check routing of hoses along entire length and correct if necessary.

1 Original vehicle hose from engine outlet

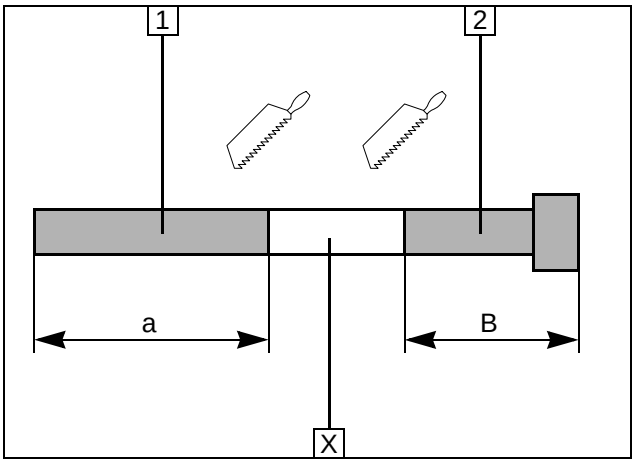
Connecting engine outlet



Combustion air

1 Intake muffler
2 Intake pipe, 27 mm dia. clamp
3 Cable tie

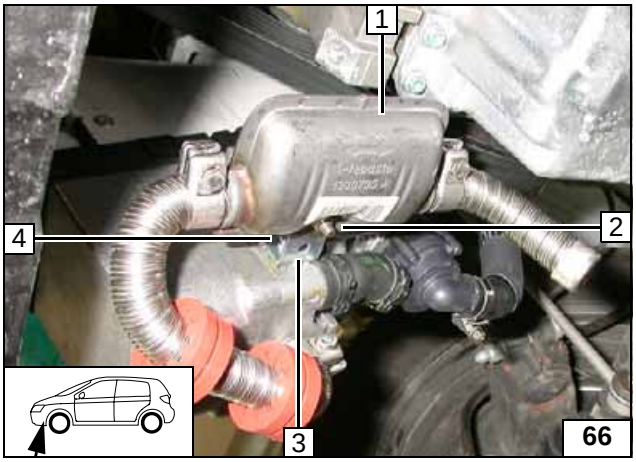
Exhaust gas



1 Exhaust pipe
a = 250
2 Exhaust end section
b = 115

Discard section **X**

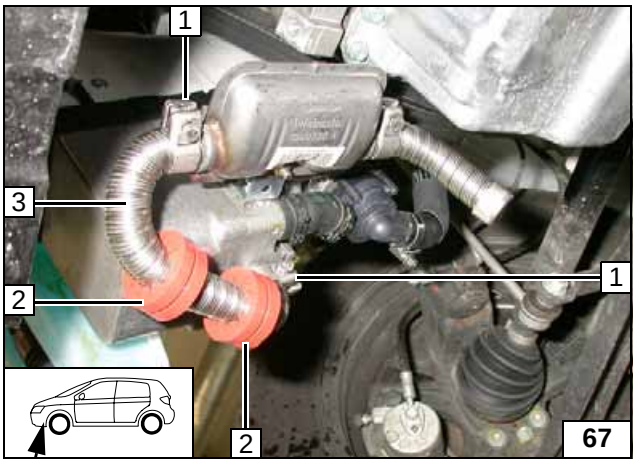
Preparing exhaust pipe



Align muffler following installation.
Ensure sufficient distance to neighboring components.

1 Exhaust muffler
2 M6x20 bolt, large diameter washer, M6 flanged nut
3 Angle bracket
4 Ejot screw

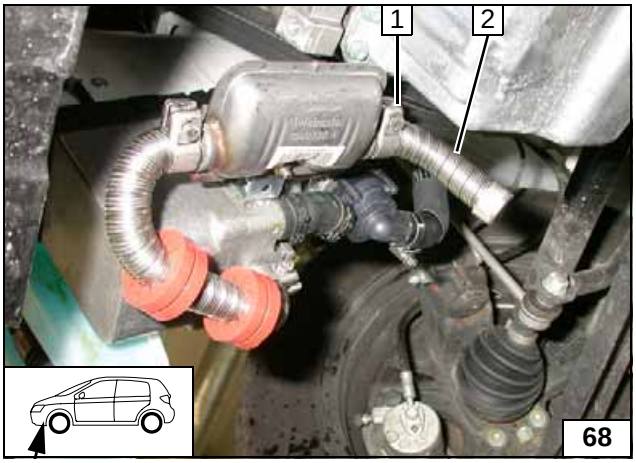
Installing muffler



Prior to installation, slide red (rt) rubber isolator with groove [2x] onto exhaust pipe and align on heater unit after installing.

1 Hose clamp [2x]
2 Red (rt) rubber isolator with groove [2x]
3 Exhaust pipe

Installing exhaust pipe



1 Hose clamp
2 Exhaust end section

Installing exhaust end section

Final Work

WARNING!
Reassemble the disassembled components in reverse order.
Check all hoses, clamps and all electrical connections for firm seating.
Secure all loose cables using cable ties.
Only use manufacturer-approved coolant.
Spray the heater unit components with anti-corrosion wax (Tectyl 100K, Order No. 111329).

- Connect the battery
- Fill and bleed the coolant circuit according to the vehicle manufacturer's specifications.
- Set the digital timer.
- Make settings on A/C control panel according to the "Operating Instructions for End Customer".
- Check the proper operation of the additional heater, see the operating instructions/installation instructions.
- Attach the "Switch off additional heater before refueling" sticker to the left-hand B-pillar.

Adjust the sensitivity of the passenger compartment monitoring

Adaptation of Passenger Compartment Monitoring

WARNING!

Observe the valid repair manual of the respective vehicle.

- Connect the VAG tester
- Open Item 46 (Central Module of Comfort System)
- Go to Item 10 (Adjustment)
- Follow the request for the code entry and enter the code 15
- Reduce the sensitivity of the passenger compartment monitoring to 50 %
- Save this setting
- The adjustment of the sensitivity of the passenger compartment monitoring is completed.

Webasto
Feel the drive

Webasto AG
Postfach 80 - 82132 Stockdorf
Hotline 01805 / 932278 - Hotfax 0395 / 5592-353
http://www.webasto.de

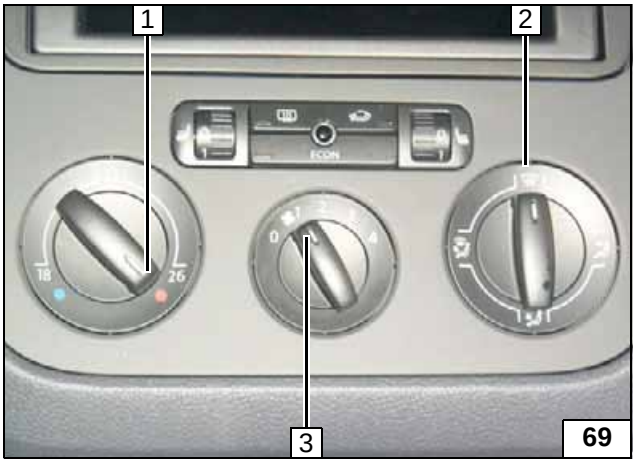
Operating Instructions for End Customer

Please remove page and add to the vehicle operating instructions.

Note:
We recommend matching the heating time to the driving time.
Heating time = driving time
Example:
For a driving time of approx. 20 min. (in one direction), we recommend not exceeding a switch-on time of 20 min.

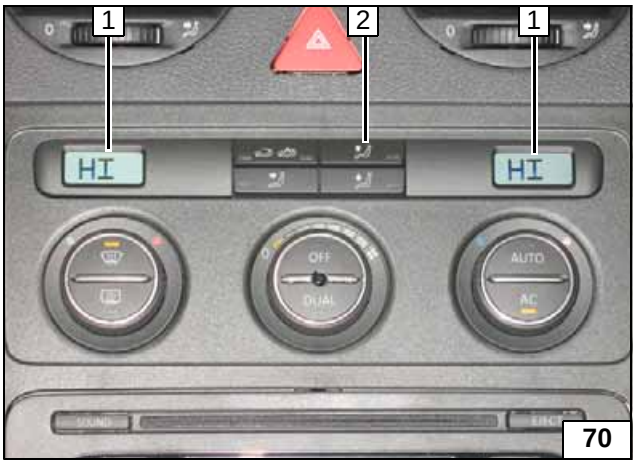
If the summer/winter switch option has been installed, this must be switched in accordance with the time of year. The heater unit will then only switch on the vehicle fan to ventilate the vehicle interior in the position Winter heat and in the position Summer.

Before parking the vehicle, make the following settings:



1 Set temperature to "max."
2 Set fan to level "1", or possibly "2"
3 Direct air outlet toward windshield

Climatic



1 Set temperature to "HI" [2x]
2 Air outlet to windshield

Automatic air-conditioning